One-sided Hopf algebras and Frobenius pairs of functors for Hopf modules

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This talk is based on a currently on-working project. We report on the existence of an adjoint triple for Hopf modules over a bialgebra H and we investigate under which conditions this form a Frobenius pair.

In details, the functor $-\otimes H$ from vector spaces to right Hopf modules over H is shown to admit both a left and a right adjoint. We will discuss how studying when these give rise to a Frobenius pair naturally leads to an equivalent characterization of (some) one-sided Hopf algebras in the sense of Green, Nichols and Taft, *Left Hopf Algebras*, J. Algebra (1980).

Time allowing, we will show that also the functor $-\otimes H$ from left H-modules to right Hopf bimodules admits both a left and a right adjoint. Being Frobenius in this case will turn out to provide an equivalent characterization of H being Hopf.